



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,685	09/07/2000	Martin Pauly	99CR125/KE	2194

7590 08/26/2003  
Rockwell Collins Inc  
Intellectual Property Department  
400 Collins Road NE  
M/S 124-323  
Cedar Rapids, IA 52498

EXAMINER

NAHAR, QAMRUN

ART UNIT	PAPER NUMBER
----------	--------------

2124

DATE MAILED: 08/26/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/656,685

Applicant(s)

PAULY, MARTIN

Examiner

Qamrun Nahar

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6, 7, 9, 14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-7, 9, and 14-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the amendment filed on June 10, 2003.
2. The objections to the drawings are withdrawn in view of applicant's amendments.
3. The objections to the specification are withdrawn in view of applicant's amendments.
4. The rejection under 35 U.S.C. 112, second paragraph, to claim 9 is withdrawn in view of applicant's amendment.
5. The rejections under 35 U.S.C. 101 to claims 1-3, 7, and 9 are withdrawn in view of applicant's amendments.
6. Claims 1-3, 6-7 and 9 have been amended.
7. Claims 1-3, 6-7, 9, and 14-15 are pending.
8. Claims 1-3, 7, 9 and 14-15 stand finally rejected under 35 U.S.C. 102(b) as being anticipated by Marmelstein (U.S. 5,187,788).
9. Claim 6 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Marmelstein (U.S. 5,187,788) in view of Magor (U.S. 5,541,863).

### ***Response to Amendment***

#### ***Drawings***

10. The corrected or substitute drawings were received on June 10, 2003. These drawings are approved.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-3, 7, 9 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Marmelstein (U.S. 5,187,788).

**Per Claim 14 (Previously Amended):**

The Marmelstein patent discloses:

- **a method of providing avionic software** (“The Avionics Program Expert (APEX) is an automatic code generation tool for the Ada programming language ... It provides the programmer using APEX with the ability to quickly create a graphical representation of his initial program design ... Once the programmer has created his complete (or even partial) representation of a program, Ada code can then be generated with (from) APEX.” in abstract and column 2, lines 58-68 to column 3, lines 1-4)

- **providing a graphical representation of a state including a plurality of parallel states, the parallel states being ordered with respect to each other, the parallel states being ordered so that only one of the parallel states is active in response to a particular event** (“At the next block 1950, the initial state of the operation is then selected (order = 1; level = 1). The level of

Art Unit: 2124

the state designates the level of nesting within the subprogram at which the state occurs. The order of the state designates the order within a give level of nesting at which the state occurs. A recursive routine represented as block 2000 (slide 6 of Fig. 20) is then called via block 2001 in order to assign an order/level to each state associated with the APEX operations object.” in column 13, lines 36-45; column 14, lines 17-68 to column 15, lines 1-4; and Fig. 6, item 600; the outgoing connections/transitions determines parallel states; that is, if there are more than one outgoing connections/transitions, then only one of the parallel states is active in response to a particular event)

- **applying the mathematical representation to an execution engine to create the avionics software** (“This recursive algorithm is an elegant way of ordering the states which make up an APEX operation ... The recursive operation causes the program to go via the block 2002 back to the start block 2001 for the slide 6 to process the next state. The algorithm concludes when all states have been assigned an order and a nesting level, and the exit is via line 2003 back to slide 5 of Fig. 19 into block 2100 ... The routine shown in Fig. 21, which corresponds to blocks 2100 and 2101 of Fig. 19, handles the actual generation of Ada code for the subprogram described by the APEX operation.” in column 13, lines 60-62 and column 14, lines 10-20).

**Per Claim 15:**

The Marmelstein patent discloses:

- **the avionics software is fully deterministic** (column 14, lines 58-68 to column 15, lines 1-33).

**Per Claims 1-3 (Currently Amended):**

These are statechart system versions of the claimed method discussed above (claims 14 and 15), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including "statechart" (column 13, lines 36-45 and Fig. 6, item 600). Thus, accordingly, these claims are also anticipated by Marmelstein.

**Per Claims 7 & 9 (Currently Amended):**

These are modified Harel statechart system versions of the claimed method discussed above (claims 14 and 15), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including "a modified Harel statechart formed on a computer" (column 13, lines 36-45 and Fig. 6, item 600). Thus, accordingly, these claims are also anticipated by Marmelstein.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marmelstein (U.S. 5,187,788) in view of Magor (U.S. 5,541,863).

Art Unit: 2124

**Per Claim 6 (Currently Amended):**

The rejection of claim 1 is incorporated, and further, Marmelstein does not explicitly teach that the avionic software is a graphical flight planner. Magor teaches that the avionic software is a graphical flight planner ("Flight Management System", column 4, lines 3-34; and Figs. 4 and 5).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the statechart disclosed by Marmelstein to include that the avionic software is a graphical flight planner using the teaching of Magor. The modification would be obvious because one of ordinary skill in the art would be motivated to ensure deterministic behavior for reactive systems such as a graphical flight planner.

***Response to Arguments***

15. Applicant's arguments with respect to claims 1-3, 6-7, 9, and 14-15 have been fully considered but they are not persuasive.

*In the remarks, the applicant argues that:*

a) In paragraph 16 of the Office Action, the Examiner rejected Claims 1-3, 7, 9, and 14-15 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,187,788 issued to Marmelstein (herein after Marmelstein). With reference to Claim 14, the Examiner cited Marmelstein as reciting that "the order of the state designates the order within a given level of nesting at which the state occurs. A recursive routine represented as block 2000 (slide 6 of Fig. 20) is then called via block 2001 in order to assign an order/level to each state associated with the APEX operations object." The Examiner cited the above as anticipating parallel states being

Art Unit: 2124

ordered with respect to each other, the parallel states being ordered so that only one of the parallel states is active in response to a particular event. With reference to Claims 1 and 7, the Examiner stated that these claims are stat-chart versions or modified Harel statechart versions of the method of Claim 14. These rejections are respectfully traversed.

Independent Claims 1, 7 and 14 recite parallel states. As stated in the specification, "when parallel states 54 52 are active, one of substate 56 or 66 and one of substate 58 or 56 is active." (Specification, Page 9, 2"d Paragraph) Accordingly, a parallel state includes multiple substates that are simultaneously active.

In contrast, Marmelstein does not teach parallel states. Marmelstein describes "the recursive routine depicted in slide 6, Fig. 20, entered via block 2001 is past A state; this routine process the state it is past. The first time it is called, it is past the initial state in the operation; after this the state it gets past is the state currently set before slide 6 is called again."

(Marmelstein, Col. 13, lines 55-60) As described, the states in Marmelstein are active serially and not in parallel. Accordingly, Marmelstein does not teach or suggest parallel states being ordered with respect to each other, the parallel states being ordered so that only one of the parallel states is active in response to a particular event. Marmelstein does not teach or suggest each and every element of independent claim 14. Accordingly, reconsideration and withdrawal of the rejection of Claims 1, 7 and 14 under 35 U.S.C. § 102(b) is respectfully requested.

*Examiner's response:*

a) Examiner strongly disagrees with applicant's assertion that Marmelstein fails to disclose the claimed limitations recited in claims 1, 7 and 14. Marmelstein clearly shows each and every



Art Unit: 2124

limitation in claims 1, 7 and 14. The applicant cites Marmelstein, Col. 13, lines 55-60 to show that the states in Marmelstein are active serially and not in parallel. However, the Examiner likes to point out that the recursive routine depicted in slide 6 is a way for ordering the states only before the operation takes place. As previously pointed out in Paper no. 8, Marmelstein teaches providing a graphical representation of a state including a plurality of parallel states, the parallel states being ordered with respect to each other, the parallel states being ordered so that only one of the parallel states is active in response to a particular event (column 13, lines 36-45; column 14, lines 17-68 to column 15, lines 1-4; and Fig. 6, item 600; the outgoing connections/transitions determines parallel states; that is, if there are more than one outgoing connections/transitions, then only one of the parallel states is active in response to a particular event). In addition, see the rejection above in paragraph 12 for rejections to claims 1, 7 and 14.

*In the remarks, the applicant argues that:*

b) Claims 2-3 depend from Claim 1 and include all of the limitations thereof. Claim 9 depends from Claim 9 and includes all of the limitations thereof. Claims 15 depends from Claim 14 and includes all of the limitations thereof. These claims are allowable for at least the reasons cited above with reference to Claims 1, 7 and 14. Accordingly, reconsideration and withdrawal of the rejection of Claims 2-3, 9 and 14 under 35 U.S.C. § 102(b) is respectfully requested.

*Examiner's response:*

b) Examiner strongly disagrees with applicant's assertion that Marmelstein fails to disclose the claimed limitations recited in claims 2-3, 9 and 15. Marmelstein clearly shows each and

Art Unit: 2124

every limitation in claims 2-3, 9 and 15. The Examiner has already addressed the applicant's arguments regarding claims 1, 7 and 14 in the Examiner's Response (a) above.

*In the remarks, the applicant argues that:*

c) In paragraph 18 of the Office Action, Claim 6 is rejected under 35 U. S. C. §103 (a) as being unpatentable over Marmelstein in view of U.S. Patent No. 5,541,863 to Magor (hereinafter Magor). This rejection is respectfully traversed.

Claim 6 depends from Claim 1 and includes all of the limitations thereof. Magor does not cure the deficiencies described above with reference to Claim 1 and Marmelstein. Accordingly, Marmelstein, alone, or in combination with Magor, does not teach or suggest all of the limitation in Claim 6. Reconsideration and withdrawal of the rejection of Claim 6 under 35 U.S.C. §103(a) is respectfully requested.

*Examiner's response:*

c) Examiner strongly disagrees with applicant's assertion that the combination of Marmelstein and Magor fails to disclose the claimed limitations recited in claim 6. The combination of Marmelstein and Magor clearly shows each and every limitation in claim 6. The Examiner has already addressed the applicant's arguments regarding claim 1 in the Examiner's Response (a) above. Furthermore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

*Conclusion*

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

17. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (703) 305-7699. The examiner can normally be reached on Mondays through Thursdays from 9:00 AM to 6:30 PM. The examiner can also be reached on alternate Fridays.

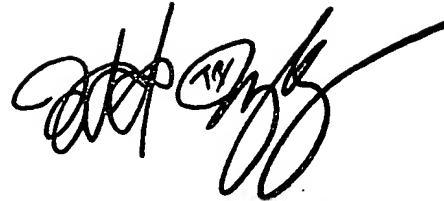
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (703) 305-9662. The fax phone number for the organization where this application or processing is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Art Unit: 2124

QN

August 11, 2003

A handwritten signature in black ink, appearing to read 'Todd Ingberg', with a long horizontal stroke extending to the right.

**Todd Ingberg**  
**Primary Examiner**  
**Group 2100**